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scenes. The illustrations are usually well executed and will prove of great value in botanical classes.

The vegetation of east Africa, so long poorly known, but now so fully brought to light by the work of Dr. Engler and his associates, is presented yet more clearly by an excellent series of 64 reproductions from photographs, taken by Walther Goetze, who lost his life while engaged in this work.⁴ Among the views here presented are coastal steppes, high grass steppes, Acacia and other tree steppes, palm woods, Euphorbia thickets, alluvial forests, mountain woods and thickets, mountain meadows, rainy forests, etc. Good text descriptions accompany the views, and it is safe to say that one may get from a careful study of this work a vivid and true picture of many of the plant formations of German East Africa.—H. C. COWLES.

MINOR NOTICES.

A. J. McCLATCHIE⁵ has brought together a large amount of interesting information concerning Eucalyptus. The purpose of the bulletin is to give information concerning the characteristics of the "eucalypts," their climatic requirements, and their uses; to give directions and suggestions as to their propagation and culture; and to furnish a means of identifying seedlings and mature trees. It seems that these trees now serve very many useful purposes in the Southwest, and give promise of great future usefulness in the semi-arid portions of our continent. The covering of the now untillable treeless portions of the semi-tropic section of America with such trees as eucalypts, which will yield fuel, timber, and other useful products, and also furnish protection from the sun, from winds, and from floods, or otherwise ameliorate existing climatic conditions, is certainly an achievement greatly to be desired. The characteristics of forty-one species, being the principal ones grown in America, are discussed, and illustrated by the ninety-one handsome reproductions of photographs.—J. M. C.

HILDEBRAND⁶ has published under the title *Ähnlichkeiten im Pflanzenreich*, a volume rather out of the ordinary in the nature of its contents. The material presented is familiar to botanists, and yet would not particularly attract the popular reader. The stock cases of similarity in general habit, and in various organs (such as cacti and euphorbias, leaves and phylloclades, raspberries and mulberries, chestnuts and horse chestnuts) are mar-

⁴ENGLER and GOETZE, Vegetationsansichten aus Deutschostafrika insbesondere aus der Khutusteppe, dem Ulugurugebirge, Uhehe, dem Kingagebirge, vom Ruogwe, dem Kondeland und der Rukwasteppe, nach 64 von Walther Goetze auf der Nyassa-See und Kinga-Gebirgs-Expedition der Hermann und Elise geb. Heckmann Wentzel-Stiftung hergestellten photographischen Aufnahmen.

⁵McCLATCHIE, A. J., Eucalypts cultivated in the United States. U. S. Dept. of Agric., Bureau of Forestry, Bull. 35. pp. 106. *pls. gr.* 1902.

⁶HILDEBRAND, F., Ueber Ähnlichkeiten im Pflanzenreich. 8vo. pp. iv+66 Leipzig: Wilhelm Engelmann. 1902. Price *M* 1.60.

shalled under different headings; a section is likewise devoted to similarities between plants and animals. The conclusions deal with causes and uses. Aside from genetic relationship and similar life conditions, the author thinks that hidden inner causes also cause similarities (e. g. in the pods of legumes and crucifers). The author thinks that likenesses, like many other things in plants, are generally useless, and that there is nothing analogous to the use of mimicry by animals.—H. C. COWLES.

M. LE PROFESSEUR ABBÉ H. LEVEILLE⁷ has begun the publication of an elaborate monograph of the genus *Onothera*, all of whose species are American, with the exception of a single Tasmanian species. This first fascicle comprises 138 pages, with numerous heliogravure plates and text cuts. After an analysis of Spach's monograph of 1835, and a general statement concerning anatomical characters and those from the seed the genus is presented under its five grand divisions (Scutiformes, Nuciformes, Laterniformes, Siliquiformes, and Prismaticiformes). The species of each division are then presented and illustrated, the fascicle ending in the midst of the third group. The second fascicle is promised early in 1903, and the third in February 1904.—J. M. C.

H. VON SCHRENK⁸ has published an account of a disease of the white ash caused by *Polyporus fraxinophilus*, which is very prevalent in the Mississippi valley, and is particularly severe in Missouri, Nebraska, and eastern Kansas, fully 90 per cent. of the trees in some localities being affected. The bulletin discusses the geographical distribution of the disease, susceptibility to this disease, method of attack, diseased wood, the sporophore, microscopic changes in the wood, growth of the fungus in dead wood, and remedies.—J. M. C.

THE LAMENTED DEATH of Dr. K. Gustav Limpricht is fortunately not to interfere with the completion of his work, *Die Laubmoose*, in Rabenhorst's *Kryptogamen-Flora*. The thirty-eighth part of the work, just issued, bringing the supplement well into the Bryums, and thus covering about three-fourths of the original, bears the name of Dr. W. Limpricht in association with his father's. Another part will probably close the final volume.—C. R. B.

O. VON SEEMEN⁹ has published an admirable account of the willows of Japan. After a discussion of previous contributions, geographical distribution, and the general principles of classification in the group, the 33 species are presented, 8 of which are new. The descriptions are very full, and the plates leave nothing to be desired.—J. M. C.

⁷ LÉVEILLÉ, H., Monographie du genre *Onothera*. Le Mans. 1902. Edition 200 copies, price 100 fr.

⁸ VON SCHRENK, HERMANN, A disease of the white ash caused by *Polyporus fraxinophilus*. U. S. Dept. Agric., Bureau of Plant Industry, Bull. 32. pp. 20. pls. 5. Feb. 1903.

⁹ SEEMEN, O. VON, *Salices Japonicae*. pp. vii + 83, pls. 18. Leipzig: Gebrüder Borntraeger. 1903. M 25.

LIEFERUNG 216 of Engler and Prantl's *Die natürlichen Pflanzenfamilien* is devoted to the conclusion of the treatment of the Orthotrichaceae, to a presentation of the Splachnaceae with 61 species, and of the Funariaceae except the last genus, Funaria. The mosses are now the only group incomplete in this monumental work.—C. R. B.

PROFESSOR ENGLER¹⁰ has published a third edition of his very useful outline of the classification of plants. It will be remembered that this includes the characterization of all families and their important subdivisions; with special mention of useful plants, since the book is intended for the use of pharmaceutical students.—J. M. C.

NOTES FOR STUDENTS.

W. A. WHEELER¹¹ has published a list of the grasses of Minnesota, based mainly on his redeterminations of the material in the herbarium of the University of Minnesota. The list includes 178 species and varieties, 24 species not having been previously reported from the state.—J. M. C.

NĚMEC¹² reports that the action of benzol and 1 per cent. CuSO_4 on the roots of *Pisum* and *Vicia* causes many cells to contain two or more nuclei. A few hours later these nuclei are found to have reunited; this fusion of nuclei is obviously not in the least homologous with sexual fusion. The roots eventually die.—E. B. COPELAND.

MELVILLE T. COOK,¹³ in investigating *Agrostemma Githago*, finds that the ovulate archesporium consists of one to three cells "of which all but one are absorbed," that a short beak projects through the micropyle, that two or three rows of cells "degenerate" to form a passage for the pollen-tube, that the proembryo is filamentous, later differentiating into a filamentous suspensor with vesicular basal cell and a large spherical embryo.—J. M. C.

CYRIL CROSSLAND¹⁴ has suggested the way in which mangrove seedlings succeed in finding a lodgment on the coast of British and German East Africa, the whole of which is composed of a hard coral limestone. The peculiar seedlings float out to sea in regular fleets, the bud projecting from the water. Upon reaching shore the root-tip is inserted into any softness or crevice of the bottom by the falling tide, and the ripples causing the seedling

¹⁰ ENGLER, A., *Syllabus der Pflanzenfamilien*. Edition 3. Berlin: Gebrüder Borntraeger. 1903. *M* 4.

¹¹ WHEELER, W. A., *Catalog of Minnesota grasses*. Minn. Bot. Studies 3: 83-107. 1903.

¹² NĚMEC, B., *Ueber ungeschlechtliche Kernschmelzungen*. Sitzber. Böhm. Gesells. Wiss. 1902. Repaged reprint, 6 pp.

¹³ COOK, MELVILLE THURSTON, *The development of the embryo-sac and embryo of Agrostemma Githago*. Ohio Naturalist 3: 365-369, pls. 7-7a. 1903.

¹⁴ CROSSLAND, CYRIL, *Note on the dispersal of mangrove seedlings*. Ann. Botany 17: 267-270. 1903.